



MATERIAL SAFETY DATA SHEET

1. Product and Company Identification

Material name Stay-Silv® Powder Brazing Flux
Version # 02
Issue date 09-June-2011
Revision date 23-July-2014
Supersedes date 09-June-2011
CAS # Mixture
MSDS Number 0134
Product use Metal brazing operations.
Manufacturer information
Manufacturer/Supplier Harris Products Group
4501 Quality Place
Mason, Ohio 45040 US
custservmason@jwharris.com
Telephone number 513-754-2000
Emergency Telephone Numbers 1-888-609-1762 (US, Canada, Mexico only)
Please quote 333988

2. Hazards Identification

Physical state Solid.
Appearance White powder.
Emergency overview CAUTION
May cause eye, skin and respiratory tract irritation. Possible adverse reproductive and developmental effects.
OSHA regulatory status This product is considered hazardous under 29 CFR 1910.1200 (Hazard Communication).
Potential health effects
Routes of exposure Inhalation. Ingestion. Skin contact. Eye contact.
Eyes May cause eye irritation.
Skin May cause skin irritation. Hydrogen fluoride, a possible decomposition product, is extremely corrosive and a poison by all routes of entry. Hydrogen fluoride can penetrate the skin and produce burns, which may not be immediately painful or visible; the burns impact the lower layers of skin and bone tissue. Hydrogen fluoride exposures involving 20 percent of the body or more can be fatal through systemic fluoride poisoning.
Inhalation May cause respiratory tract irritation. Prolonged inhalation may be harmful.
Ingestion Ingestion may cause irritation and malaise.
Target organs Skin. Bone. Kidneys.
Chronic effects Can cause adverse reproductive effects - such as birth defects, miscarriages, or infertility. Sterility. Prolonged overexposure to fluorides may increase fluoride content of bones and teeth, and may result in fluorosis, and brittleness of bones. Prolonged or repeated contact may dry skin and cause dermatitis. Edema. Kidney injury may occur. Refer to Section 11 Toxicological Information for more details.
Signs and symptoms Contact may cause irritation and redness. Dust may irritate respiratory system. Symptoms of overexposure may be headache, dizziness, tiredness, nausea and vomiting.
Potential environmental effects The product may affect the acidity (pH-factor) in water with risk of harmful effects to aquatic organisms.

3. Composition / Information on Ingredients

Components	CAS #	Percent
Potassium fluoroborate	14075-53-7	40 - 60

Components	CAS #	Percent
Potassium tetraborate	12045-78-2	20 - 40
Boric acid	10043-35-3	10 - 20

Composition comments All concentrations are in percent by weight unless ingredient is a gas. Gas concentrations are in percent by volume.

4. First Aid Measures

First aid procedures

Eye contact	Immediately rinse eyes with water. Remove any contact lenses, and continue flushing eyes with running water for at least 15 minutes. Hold eyelids apart to ensure rinsing of the entire surface of the eye and lids with water. Get immediate medical attention.
Skin contact	Remove contaminated clothes and rinse skin thoroughly with water for at least 15 minutes. A 2.5 pct calcium gluconate gel applied topically after skin has been thoroughly washed will help reduce severity of symptoms. Get medical attention if irritation develops and persists.
Inhalation	Remove person from contaminated area to fresh air. Apply artificial respiration if needed. Call a physician if symptoms develop or persist.
Ingestion	Do NOT induce vomiting. Immediately rinse mouth and drink a cupful of water. Never give anything by mouth to an unconscious person. Get medical attention immediately.

General advice Show this safety data sheet to the doctor in attendance.

5. Fire Fighting Measures

Flammable properties The product is not flammable.

Extinguishing media

Suitable extinguishing media Use fire-extinguishing media appropriate for surrounding materials. Water spray, foam, dry powder or carbon dioxide.

Protection of firefighters

Protective equipment and precautions for firefighters Self-contained breathing apparatus and full protective clothing must be worn in case of fire.

Fire fighting equipment/instructions Move containers from fire area if you can do so without risk.

Specific methods Use standard firefighting procedures and consider the hazards of other involved materials.

6. Accidental Release Measures

Personal precautions Keep unnecessary personnel away. Avoid inhalation of dust from the spilled material. Wear protective clothing as described in Section 8 of this MSDS. Do not touch damaged containers or spilled material unless wearing appropriate protective clothing.

Environmental precautions Prevent further leakage or spillage if safe to do so. Do not contaminate water.

Methods for containment Stop leak if you can do so without risk. Prevent entry into waterways, sewer, basements or confined areas. Local authorities should be advised if significant spillages cannot be contained.

Methods for cleaning up Should not be released into the environment. Prevent product from entering drains. Do not allow material to contaminate ground water system.

Large Spills: Sweep up and place into a proper container for disposal. Avoid the generation of dusts during clean-up.

Small Spills: Wipe up spilled material and place in a suitable container for disposal.

Never return spills in original containers for re-use. Following product recovery, flush area with water. Clean surface thoroughly to remove residual contamination. This material and its container must be disposed of as hazardous waste. For waste disposal, see Section 13 of the MSDS.

Other information Clean up in accordance with all applicable regulations.

7. Handling and Storage

Handling Keep formation of airborne dusts to a minimum. Provide appropriate exhaust ventilation at places where dust is formed. Avoid inhalation of dust and fumes. Avoid contact with skin and eyes. Wear appropriate personal protective equipment (See Section 8). Do not get this material on clothing. Do not eat, drink or smoke when using the product. Wash thoroughly after handling. Avoid release to the environment.

Storage

Store in tightly closed original container in a dry, cool and well-ventilated place. Store in a closed container away from incompatible materials. Do not store in container made of glass or silicate-based material. Keep away from food, drink and animal feedings. Keep out of the reach of children.

8. Exposure Controls / Personal Protection**Occupational exposure limits****US. ACGIH Threshold Limit Values**

Components	Type	Value	Form
Boric acid (CAS 10043-35-3)	STEL	6 mg/m3	Inhalable fraction.
	TWA	2 mg/m3	Inhalable fraction.
Potassium fluoroborate (CAS 14075-53-7)	STEL	6 mg/m3	Inhalable fraction.
	TWA	2 mg/m3	Inhalable fraction.
Potassium tetraborate (CAS 12045-78-2)	STEL	6 mg/m3	Inhalable fraction.
	TWA	2 mg/m3	Inhalable fraction.

US. OSHA Table Z-1 Limits for Air Contaminants (29 CFR 1910.1000)

Components	Type	Value
Potassium fluoroborate (CAS 14075-53-7)	PEL	2.5 mg/m3

US. OSHA Table Z-2 (29 CFR 1910.1000)

Components	Type	Value	Form
Potassium fluoroborate (CAS 14075-53-7)	TWA	2.5 mg/m3	Dust.

Canada. Alberta OELs (Occupational Health & Safety Code, Schedule 1, Table 2)

Components	Type	Value
Potassium fluoroborate (CAS 14075-53-7)	TWA	2.5 mg/m3

Canada. British Columbia OELs. (Occupational Exposure Limits for Chemical Substances, Occupational Health and Safety Regulation 296/97, as amended)

Components	Type	Value	Form
Boric acid (CAS 10043-35-3)	STEL	6 mg/m3	Inhalable
	TWA	2 mg/m3	Inhalable
Potassium fluoroborate (CAS 14075-53-7)	TWA	2.5 mg/m3	

Canada. Manitoba OELs (Reg. 217/2006, The Workplace Safety And Health Act)

Components	Type	Value	Form
Boric acid (CAS 10043-35-3)	STEL	6 mg/m3	Inhalable fraction.
	TWA	2 mg/m3	Inhalable fraction.
Potassium fluoroborate (CAS 14075-53-7)	STEL	6 mg/m3	Inhalable fraction.
Potassium tetraborate (CAS 12045-78-2)	STEL	6 mg/m3	Inhalable fraction.
	TWA	2 mg/m3	Inhalable fraction.

Canada. Ontario OELs. (Control of Exposure to Biological or Chemical Agents)

Components	Type	Value	Form
Boric acid (CAS 10043-35-3)	STEL	6 mg/m3	Inhalable fraction.
	TWA	2 mg/m3	Inhalable fraction.
Potassium fluoroborate (CAS 14075-53-7)	STEL	6 mg/m3	Inhalable fraction.

Canada. Ontario OELs. (Control of Exposure to Biological or Chemical Agents)

Components	Type	Value	Form
Potassium tetraborate (CAS 12045-78-2)	STEL	6 mg/m3	Inhalable fraction.
	TWA	2 mg/m3	Inhalable fraction.

Canada. Quebec OELs. (Ministry of Labor - Regulation Respecting the Quality of the Work Environment)

Components	Type	Value
Potassium fluoroborate (CAS 14075-53-7)	TWA	2.5 mg/m3

Mexico. Occupational Exposure Limit Values

Components	Type	Value
Potassium fluoroborate (CAS 14075-53-7)	TWA	2.5 mg/m3

Biological limit values**ACGIH Biological Exposure Indices**

Components	Value	Determinant	Specimen	Sampling Time
Potassium fluoroborate (CAS 14075-53-7)	3 mg/l	Fluoride	Urine	*
	2 mg/l	Fluoride	Urine	*

* - For sampling details, please see the source document.

Engineering controls Provide adequate ventilation. Observe Occupational Exposure Limits and minimize the risk of inhalation of dust. Shower, hand and eye washing facilities near the workplace are recommended.

Personal protective equipment

Eye / face protection Wear safety glasses with side shields (or goggles).

Skin protection Chemical resistant clothing is recommended.

Respiratory protection Use a respirator when local exhaust or ventilation is not adequate to keep exposures below the TLV. In a confined space a supplied respirator may be required. Selection and use of respiratory protective equipment should be in accordance with OSHA General Industry Standard 29 CFR 1910.134; or in Canada with CSA Standard Z94.4.

Hand protection Wear protective gloves (i.e. latex, nitrile, neoprene).

General hygiene considerations Always observe good personal hygiene measures, such as washing after handling the material and before eating, drinking, and/or smoking. Routinely wash work clothing and protective equipment to remove contaminants.

9. Physical & Chemical Properties

Appearance White powder.

Physical state Solid.

Form Fine powder.

Color White.

Odor Odorless.

Odor threshold Not available.

pH Not available.

Vapor pressure Not available.

Vapor density Not available.

Boiling point Not available.

Melting point/Freezing point Not available.

Solubility (water) Moderate.

Specific gravity 1.5 - 1.7

Flash point Not available.

Flammability limits in air, upper, % by volume Not available.

Flammability limits in air, lower, % by volume Not available.

Auto-ignition temperature Not available.

10. Chemical Stability & Reactivity Information

Chemical stability Material is stable under normal conditions.
Conditions to avoid Contact with incompatible materials.
Incompatible materials Strong oxidizing agents. Strong acids. Halogenated compounds. Silicate-based materials.
Hazardous decomposition products Hydrogen fluoride, fluorine-, boron- and potassium-containing compounds.

11. Toxicological Information

Toxicological data

Components	Species	Test Results
Boric acid (CAS 10043-35-3)		
Acute		
Dermal		
LD50	Rabbit	> 2000 mg/kg
Oral		
LD50	Rat	2660 mg/kg
Potassium tetraborate (CAS 12045-78-2)		
Acute		
Oral		
LD50	Rat	3500 - 4100 mg/kg
Sensitization	Not classified.	
Acute effects	May cause skin and eye irritation. Dust irritates the respiratory system, and may cause coughing and difficulties in breathing.	
Local effects	Dusts or powder may irritate the respiratory tract, skin and eyes.	
Chronic effects	Prolonged exposure may cause chronic effects. May cause damage to the kidneys. Repeated exposure to fluorides may cause excessive calcification of the bone and calcification of ligaments of the ribs, pelvis and spinal column. Exposure to extremely high levels of fluorides can cause abdominal pain, diarrhea, muscular weakness, and convulsions. In extreme cases it can cause loss of consciousness and death.	
Subchronic effects	Kidney injury may occur.	
Carcinogenicity	This product is not considered to be a carcinogen by IARC, ACGIH, NTP, or OSHA.	
ACGIH Carcinogens		
Boric acid (CAS 10043-35-3)	A4 Not classifiable as a human carcinogen.	
Potassium tetraborate (CAS 12045-78-2)	A4 Not classifiable as a human carcinogen.	
OSHA Specifically Regulated Substances (29 CFR 1910.1001-1050)		
Not listed.		
Epidemiology	No epidemiological data is available for this product.	
Mutagenicity	No data available to indicate product or any components present at greater than 0.1% are mutagenic or genotoxic.	
Reproductive effects	Possible reproductive hazard.	
Teratogenicity	May cause birth defects. Avoid exposure to women during early pregnancy.	
Symptoms and target organs	Symptoms include itching, burning, redness, and tearing of eyes. Itching, redness, burning of skin. Symptoms of overexposure may be headache, dizziness, tiredness, nausea and vomiting. Target organs: Skin. Bones. Kidney.	
Further information	Symptoms may be delayed.	

12. Ecological Information

Ecotoxicological data

Components	Species	Test Results
Boric acid (CAS 10043-35-3)		
Aquatic		
Fish	LC50 Bonytail (Gila elegans)	> 100 mg/l, 96 hours

Ecotoxicity	The product is not classified as environmentally hazardous. However, this does not exclude the possibility that large or frequent spills can have a harmful or damaging effect on the environment. Large amounts of the product may affect the acidity (pH-factor) in water with possible risk of harmful effects to aquatic organisms.
Environmental effects	An environmental hazard cannot be excluded in the event of unprofessional handling or disposal.
Aquatic toxicity	Not classified.
Persistence and degradability	No data is available on the degradability of this product.
Bioaccumulation / accumulation	Not available.
Mobility in environmental media	The product is partly soluble in water. May spread in the aquatic environment.

13. Disposal Considerations

Disposal instructions	Do not allow this material to drain into sewers/water supplies. Dispose in accordance with all applicable regulations.
Waste from residues / unused products	Dispose of in accordance with local regulations.
Contaminated packaging	Empty containers should be taken to an approved waste handling site for recycling or disposal.

14. Transport Information

DOT	Not regulated as a hazardous material by DOT.
IATA	Not regulated as dangerous goods.
IMDG	Not regulated as dangerous goods.
TDG	Not regulated as dangerous goods.

15. Regulatory Information

US federal regulations	This product is a "Hazardous Chemical" as defined by the OSHA Hazard Communication Standard, 29 CFR 1910.1200. All components are on the U.S. EPA TSCA Inventory List. CERCLA/SARA Hazardous Substances - Not applicable.
TSCA Section 12(b) Export Notification (40 CFR 707, Subpt. D)	Not regulated.
Clean Air Act (CAA) Section 112 Hazardous Air Pollutants (HAPs) List	Not regulated.
CERCLA (Superfund) reportable quantity (lbs) (40 CFR 302.4)	None
Superfund Amendments and Reauthorization Act of 1986 (SARA)	
Hazard categories	Immediate Hazard - Yes Delayed Hazard - Yes Fire Hazard - No Pressure Hazard - No Reactivity Hazard - No
SARA 302 Extremely hazardous substance	Not listed.
SARA 311/312 Hazardous chemical	Yes
Drug Enforcement Administration (DEA) (21 CFR 1308.11-15)	Not controlled
Canadian regulations	This product has been classified in accordance with the hazard criteria of the CPR and the MSDS contains all the information required by the CPR.
WHMIS status	Controlled

WHMIS classification

D2A - Other Toxic Effects-VERY TOXIC
D2B - Other Toxic Effects-TOXIC

WHMIS labeling**Inventory status**

Country(s) or region	Inventory name	On inventory (yes/no)*
Australia	Australian Inventory of Chemical Substances (AICS)	Yes
Canada	Domestic Substances List (DSL)	Yes
Canada	Non-Domestic Substances List (NDSL)	Yes
China	Inventory of Existing Chemical Substances in China (IECSC)	Yes
Europe	European Inventory of Existing Commercial Chemical Substances (EINECS)	Yes
Europe	European List of Notified Chemical Substances (ELINCS)	No
Korea	Existing Chemicals List (ECL)	Yes
New Zealand	New Zealand Inventory	Yes
Philippines	Philippine Inventory of Chemicals and Chemical Substances (PICCS)	Yes
United States & Puerto Rico	Toxic Substances Control Act (TSCA) Inventory	Yes

*A "Yes" indicates this product complies with the inventory requirements administered by the governing country(s).

A "No" indicates that one or more components of the product are not listed or exempt from listing on the inventory administered by the governing country(s).

State regulations

This product does not contain a chemical known to the State of California to cause cancer, birth defects or other reproductive harm.

US - California Hazardous Substances (Director's): Listed substance

Potassium fluoroborate (CAS 14075-53-7) Listed.

US - California Proposition 65 - Carcinogens & Reproductive Toxicity (CRT): Listed substance

Not listed.

US. Massachusetts RTK - Substance List

Not regulated.

US. New Jersey Worker and Community Right-to-Know Act

Boric acid (CAS 10043-35-3)

Potassium tetraborate (CAS 12045-78-2)

US. Pennsylvania Worker and Community Right-to-Know Law

Potassium fluoroborate (CAS 14075-53-7)

Mexico regulations

This safety data sheet was prepared in accordance with the Official Mexican Standard (NOM-018-STPS-2000).

16. Other Information**Further information**

HMIS® is a registered trade and service mark of the NPCA.

HMIS® ratings

Health: 2*

Flammability: 0

Physical hazard: 0

NFPA ratings**Disclaimer**

The information in the sheet was written based on the best knowledge and experience currently available.

Prepared by

Not available.